Jordan Lake Rules Update

for

Jordan Lake Committee
Legislative Research Commission

Tom Reeder – Director

Division of Water Resources

February 19, 2014

Talk Overview

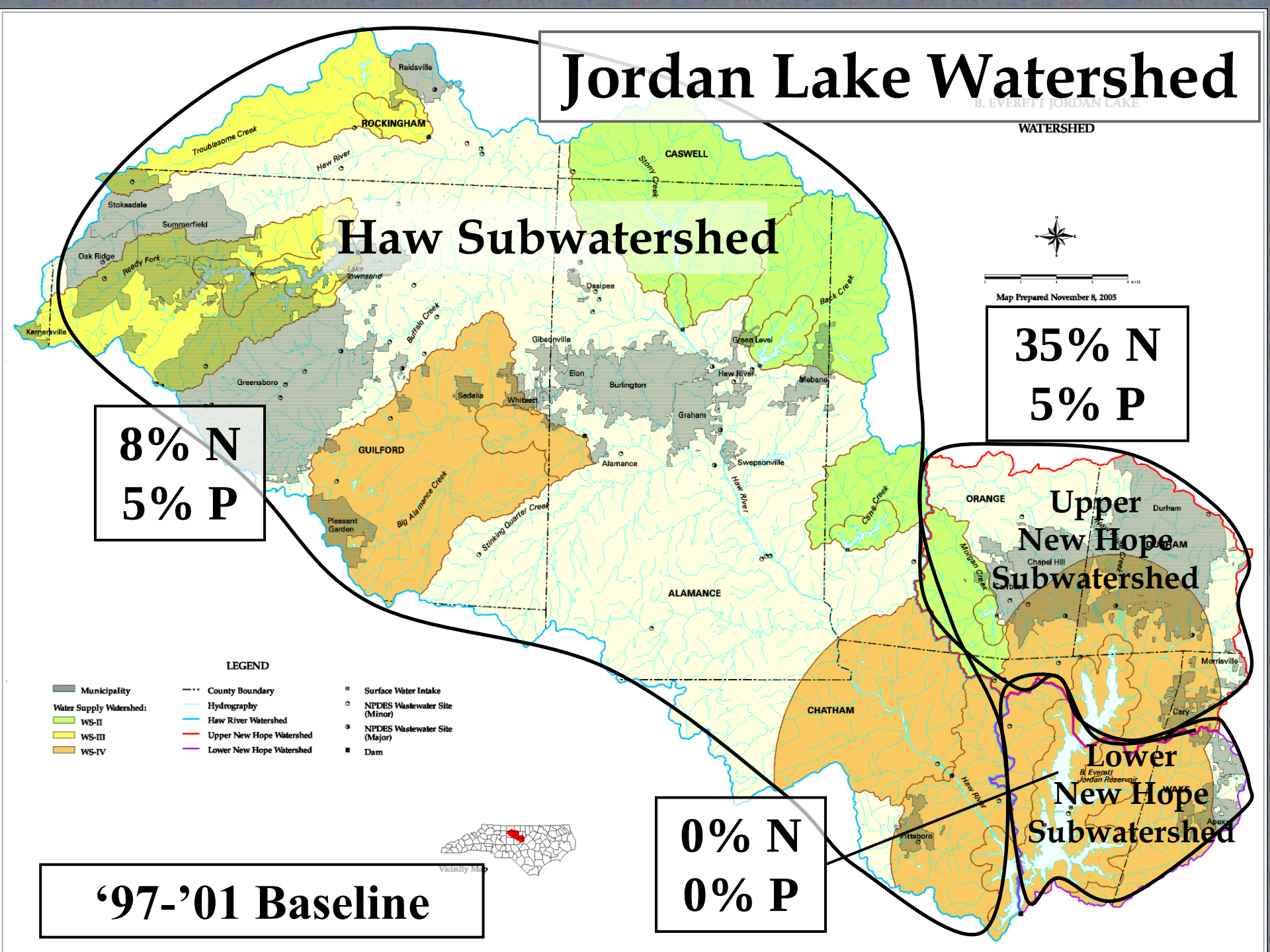
Rule by Rule:

- **Other Regulations**
- **Rule Requirements**
- **Status of Implementation**
- **Costs**

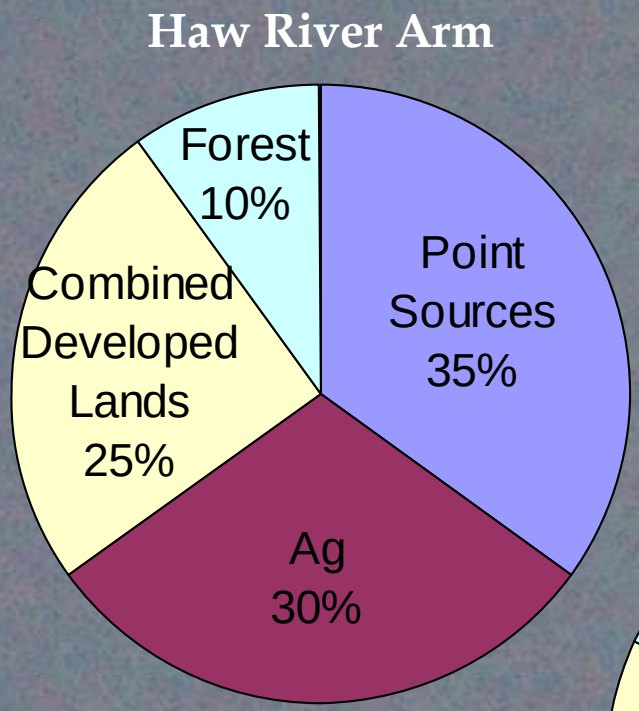
Jordan Rules
15A NCAC 02B

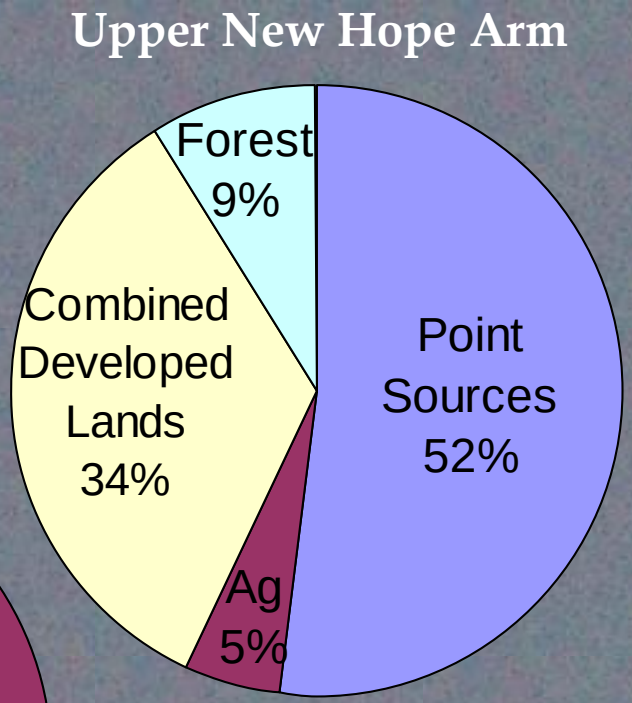
- .0262 - Purpose and Scope (Goals) [5]
- .0263 - Definitions
- .0264 - Agriculture[6]
- .0265 - Stormwater- New Development[2,4,6]
- .0266 - Stormwater- Existing Development [1,6]
- .0267, .0268, .0269 - Riparian Buffer Rules[2,6]
- .0270 - Wastewater Discharges[1, 3,6]
- .0271 - Stormwater - State and Federal Entities[2,6]
- .0272 - Fertilizer Management
- .0273 - Trading

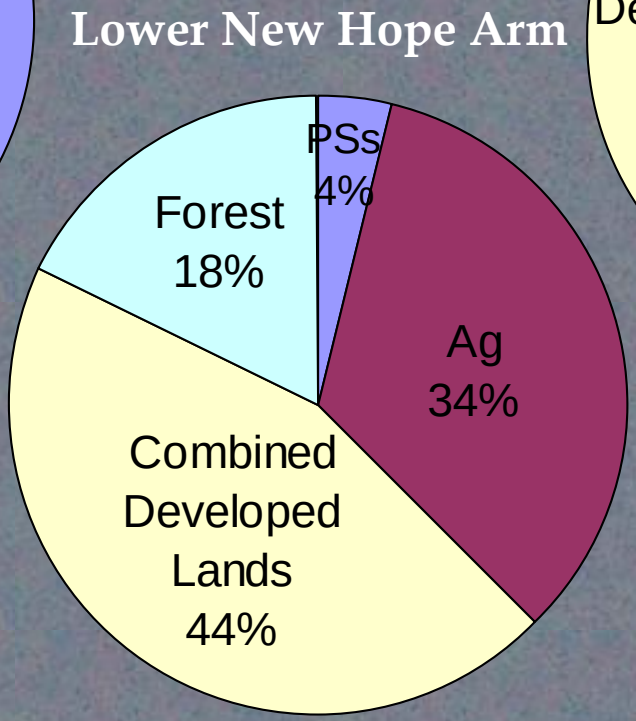
[1] Affected by SL 2009-216	[4]Affected by SL 2012 200 & 201
[2] Affected by SL 2009-484	[5]Affected by SL 2012-187
[3]Affected by SL 2011-394	[6]Affected by SL 2013-395


Jordan Lake Watershed
B. EVERETT JORDAN LAKE
WATERSHED
Haw Subwatershed
Map Prepared November 8, 2005
35% N
5% P
8% N
5% P
Upper
New Hope
Subwatershed
Lower
New Hope
Subwatershed
0% N
0% P
'97-'01 Baseline
Reidsville
ROCKINGHAM
Troublesome Creek
Haw River
CASWELL
Stony Creek
Stokesdale
Summerfield
Oak Ridge
Reedy Fork
Lake Townsend
Ossipee
Buffalo Creek
Back Creek
Kernersville
Gibsonville
Green Level
Greensboro
Elon
Burlington
Haw River
Mebane
Sedalia
Whitsett
Graham
GUILFORD
Alamance
Swepsonville
Haw River
Pleasant Garden
Big Alamance Creek
Stinking Quarter Creek
Cane Creek
ORANGE
Durham
Morgan Creek
Chapel Hill
ALAMANCE
Morrisville
CHATHAM
Cary
Haw River
B. Everett Jordan Reservoir
Pittsboro
Apex
LEGEND
Municipality
Water Supply Watershed:
WS-II
WS-III
WS-IV
County Boundary
Hydrography
Haw River Watershed
Upper New Hope Watershed
Lower New Hope Watershed
Surface Water Intake
NPDES Wastewater Site (Minor)
NPDES Wastewater Site (Major)
Dam
Vicinity Map

N Inputs to Arms of Jordan Lake



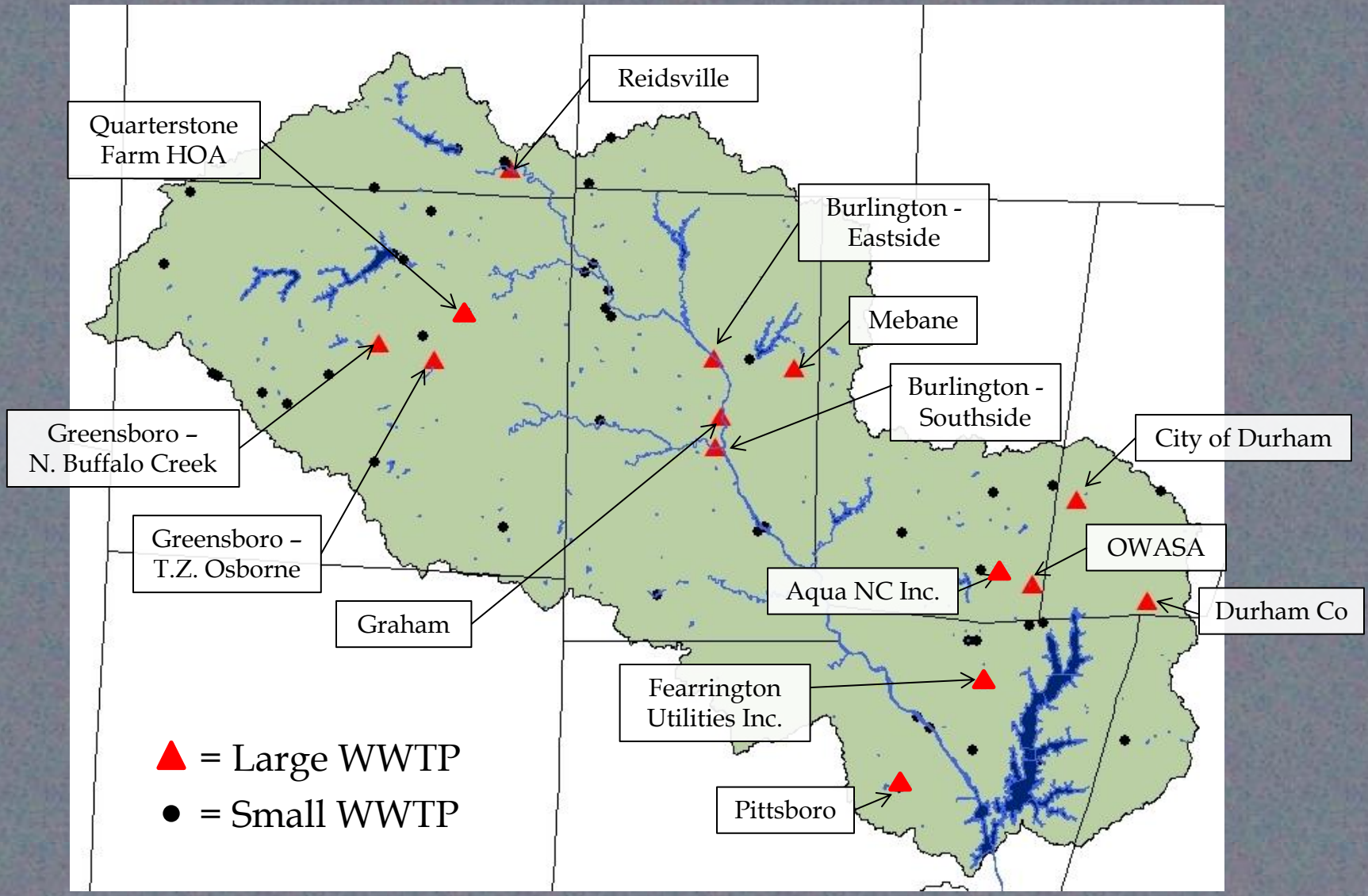




Wastewater Background – Other Regulations

- NPDES Permits
- Water Supply Watershed (WS-II - WS-IV)
- Clean Water Responsibility Act (SL 1997-458)
  - Compliance by 2003
  - N=5.5 mg/L; P=2 mg/L
    or Meet Lake Modeling Requirements

Wastewater Dischargers



Wastewater Dischargers - Jordan Requirements

- Goal loads allocated to 45 existing WWTPs
- Individual N, P load allocations (lbs/yr)
  - Based on equivalent concentrations
  - Major equivalent concentrations
    - UNH -> N=3.04; P=0.23
    - LNH -> N=5.35; P=0.37
    - Haw -> N=5.29; P=0.66
- Compliance dates:
  - 2010: Phosphorus
  - 2019 or 2021: Nitrogen
- Options:
  - Group compliance, allocation trading

Wastewater Implementation

- All WWTPs meeting Phosphorus (2010)
- Nitrogen (2019 or 2021)

  UNH
  - Two not complying: City of Durham and OWASA
  - Two complying: Durham Co. and Aqua NC Inc.

  LNH
  - One not complying: Fearrington Village

  Haw
  - Two not complying : Both of Greensboro's

Wastewater Dischargers - 2007 Projected Costs

Total Costs Years 1-8	NUTRIENT COSTS		
	Other Regs: CWRA	Jordan Rules - Additional	Total
Upper New Hope	$ -	$ 69,689,000	$ 69,689,000
Lower New Hope	$ 2,989,000	$ 1,396,000	$ 4,385,000
Haw River	$ 191,618,000	$ 11,259,000	$ 202,877,000
Total (All Subwatersheds)	$ 194,607,000	$ 82,344,000	$ 276,951,000

Wastewater Dischargers - Actual and Planned Nutrient Costs

WWTP	Permitted Flow (MGD)	Pre-Jordan CWRA Capital Costs		Remaining CWRA/Jordan Capital Costs		
		Capital Costs	Complete Date	Spent to Date	Planned	Complete Date
OWASA	14.5	$22.5 mil	2009		$1.9 mil	2015
Durham Co.	12	$47mil*	2005			
Aqua NC	0.35	$363k	2008			
Greensboro	56				$98 mil	2021
Durham City	20			$12. 6 mil		May 2014
S. Burlington	12			$18 mil		Dec 2013
E. Burlington	12			$8 mil		Jan 2014
Reidsville	7.5					
Mebane	2.5			$1.1 mil		Jan 2014
Quarterstone	0.2					
TOTALS	**137 MGD**	**$69.9 mil**		**$38.6**	**$99.9 mil**	**Total Capital = $209 mil***

Stormwater Background - Other Regulations

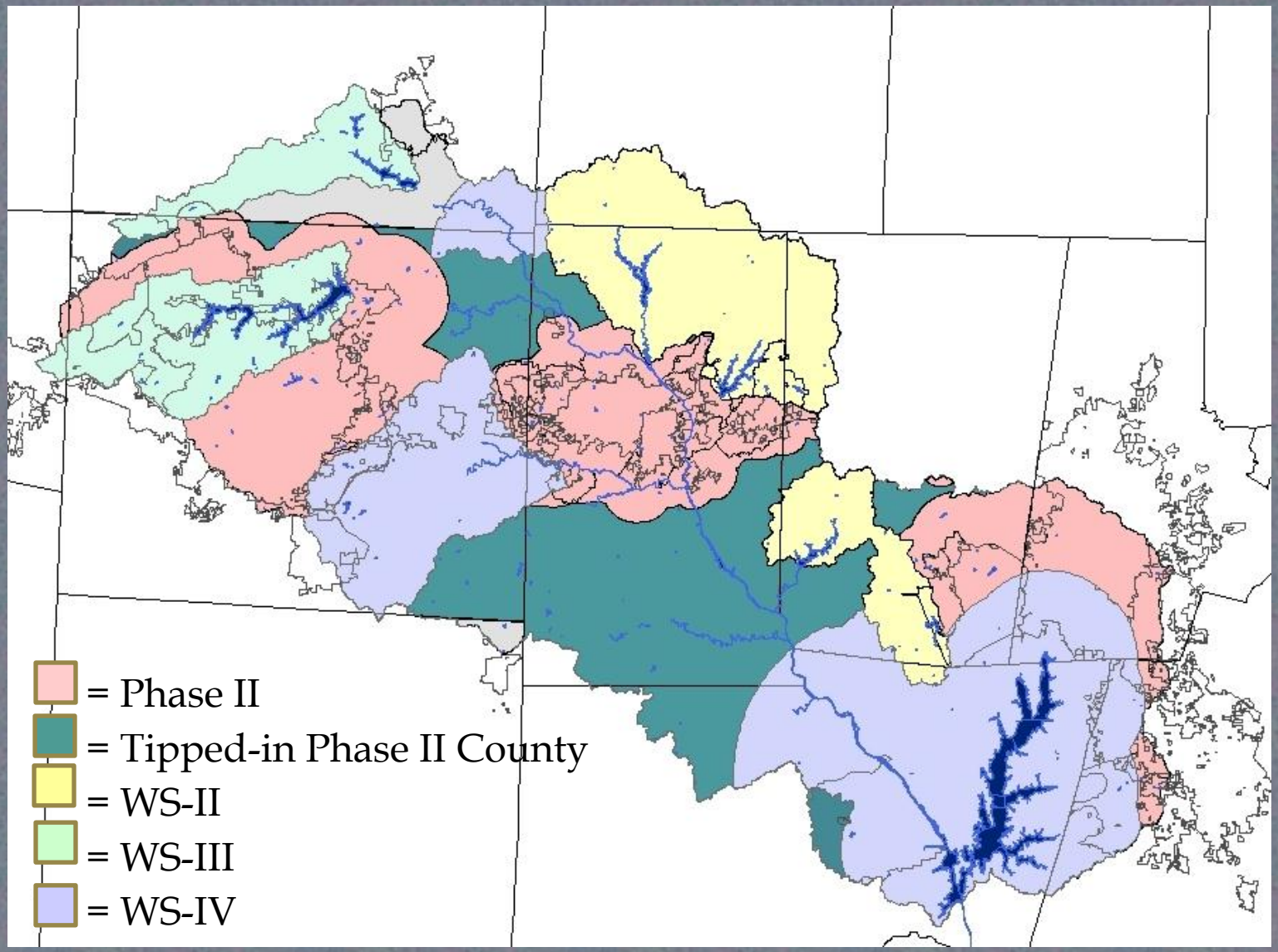
Water Supply Watersheds (WS-II – WS-IV)

- Density over 12-24% = 85% TSS removal
- 30', 100' setback requirements

NPDES Phase I/II

- Density over 24% = 85% TSS removal
- 30' buffer requirements
- 1 year, 24-hour storm peak rate match

Existing Stormwater Regulations – NPDES Phase II & Water Supply Watersheds



Jordan New Development Stormwater Requirements

Loading Rate Targets		
Subwatershed	N (lb/ac/yr)	P (lb/ac/yr)
Upper New Hope	2.2	0.82
Lower New Hope	4.4	0.78
Haw	3.8	1.43

- **If over rate target, 85% TSS Removal**
- **Offsite Thresholds (lb/ac/yr)**
  - **6 lbs/ac/yr - single-family and duplex residential**
  - **10 lbs/ac/yr - commercial and industrial**
- **Offsite options: EEP, Privates Banks**

Jordan New Development Stormwater Implementation

- Mar '11 – EMC approved model program
- May '12 – EMC approved local programs
- Jul '12 & '13 - S.L.s delayed implementation to Aug '17
- 11 of 33 voluntarily implementing

Jordan New Development Stormwater – Voluntary Implementation

Voluntarily Implementing	
Local Government	**Date**
Chatham Co.	Aug '12
Durham Co.	Jun '12
Orange Co.	Jun '12
Wake Co.	Jul '12
Carrboro	Jun '12
Cary	Oct '12
Chapel Hill	Dec '12
Durham	June '12
Morrisville	Feb '12
Oak Ridge	Aug '12
Pittsboro	Nov '13

Not Implemented	
Alamance Co.	Greensboro
Caswell Co.	Haw River
Guilford Co.	Kernersville
Rockingham Co.	Mebane
Alamance	Ossippee
Apex	Pleasant Garden
Burlington	Reidsville
Elon	Sedalia
Gibsonville	Stokesdale
Graham	Summerfield
Green Level	Whitsett

Existing Development Background
Other Regulations

NPDES Phase II Stormwater Programmatic Measures

- **Illicit Discharge Detection and Elimination (IDDE)**
- **Mapping**
- **Public Education**
- **BMP O&M Plan**

Jordan Existing Development Stormwater Requirements

- SL 2009-216 wholly replaced EMC Rule
- All local governments
- Stage I & II
  - Stage I – Programmatic Measures (2010)
  - Stage II – Implement nutrient practices toward goals
    - Triggered by monitoring program in:
      - Jun '18 - UNH (8%N, 5%P)
      - Jun '21 - LNH and Haw (8%N, 5%P)
      - Jun '27 - UNH (35%N)
- Nutrient Scientific Advisory Board (NSAB)

Jordan Existing Development Stormwater Implementation

- 2010 – Stage I Programs; annual reports
- 2010 – Nutrient Scientific Advisory Board initiated
- Jul 2013 – Draft model program to EMC
- Jun 2014 – Watershed model to assign load reduction needs
- 2014-2016 – Adding Nutrient Practices to Tool Box

Jordan Existing Development Stormwater Cost

- 2007 Estimated Full Cost ~ $528 million
- Factors that may lower costs
  - Assume traditional costly stormwater retrofits
    - DWR working with NSAB, UNRBA to credit more cost-effective load-reducing measures
  - Assume meeting full % reductions
    - Local governments to propose timeline
  - Shift to maintenance mode if lake recovers

Jordan Riparian Buffer Protection

Implementation

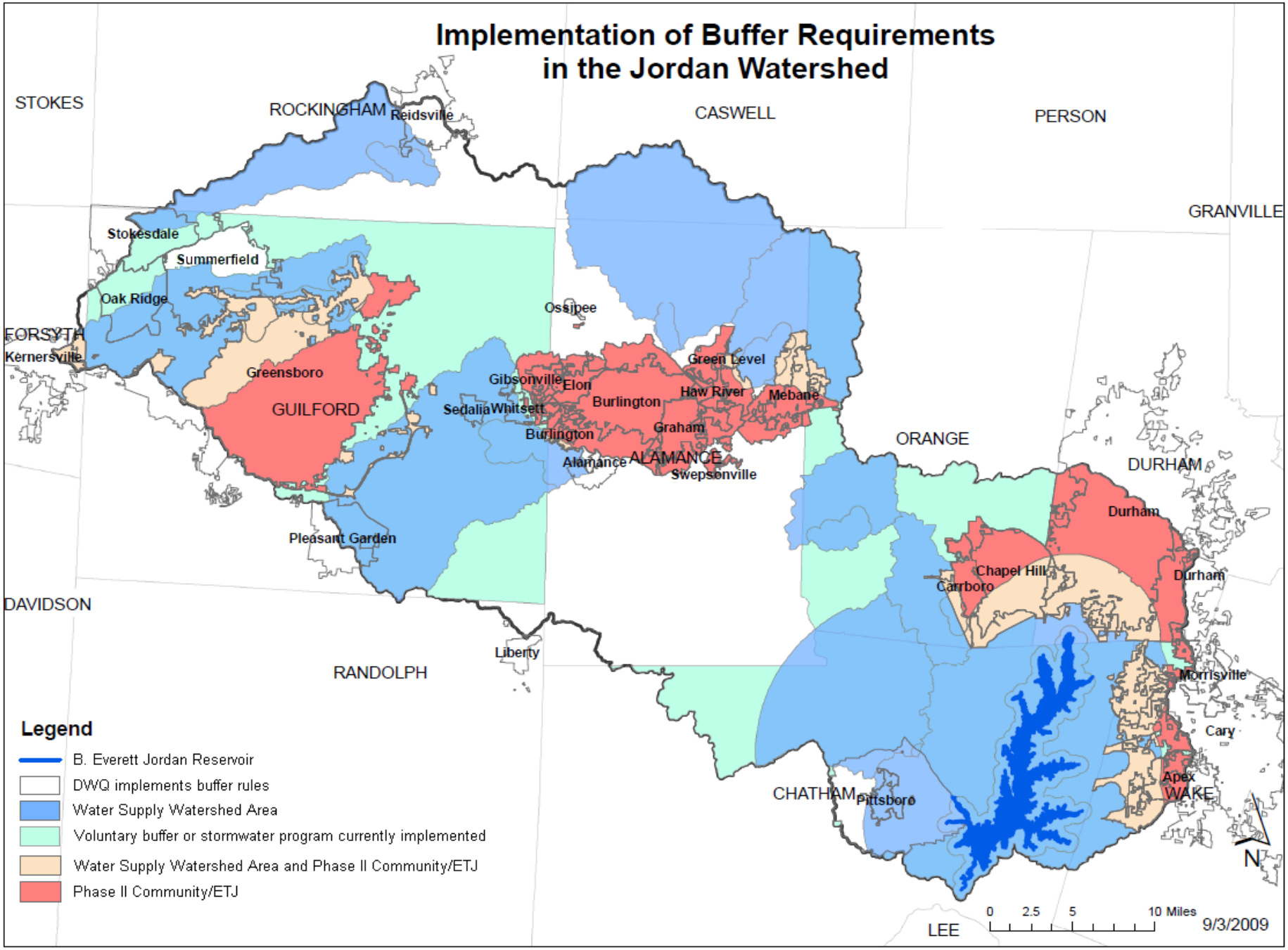
- **Aug 2009 - DWQ-implemented areas**
- **Nov '10 / Mar '11 – Local governments**

Projected Cost

- **~$4.2 million**
  - **~$2.5 million of mitigation**
  - **~$1 million of forestry lost timber**

Riparian Buffers Protection

- Similar to Neuse & Tar-Pam Buffer Rules
- 50’ vegetated buffers protected
  - 2 zones – inner 30’ forested, outer 20’ vegetated
- Existing buffer uses grandfathered
- Mitigation options: restoration, offset fee, property donation
- Local governments administer most activities


Implementation of Buffer Requirements
in the Jordan Watershed
STOKES
ROCKINGHAM
Reidsville
CASWELL
PERSON
GRANVILLE
Stokesdale
Summerfield
Oak Ridge
Ossipee
FORSYTH
Kernersville
Greensboro
GUILFORD
Gibsonville
Elon
Green Level
Haw River
Mebane
Burlington
Sedalia
Whitsett
Burlington
Graham
ALAMANCE
Alamance
Swepsonville
ORANGE
DURHAM
Durham
Pleasant Garden
Chapel Hill
Carrboro
Durham
DAVIDSON
Liberty
RANDOLPH
Morrisville
Cary
Apex
WAKE
CHATHAM
Pittsboro
LEE
Legend
B. Everett Jordan Reservoir
DWQ implements buffer rules
Water Supply Watershed Area
Voluntary buffer or stormwater program currently implemented
Water Supply Watershed Area and Phase II Community/ETJ
Phase II Community/ETJ
0 2.5 5 10 Miles
N
9/3/2009

Other Agriculture Regulatory Requirements

- **Concentrated Animal Feeding Operations (CAFO) including application to crops**
- **Biosolids application to crops**

Jordan Agriculture Rule

Requirements

- Aug '18 - Collectively achieve N% & P Goals
- Aug '21 – Additional requirements if goals not met

Implementation

- Oct 2009 - Watershed Oversight Committee formed
- Jul 2011 – EMC approved accounting methods
- Jul 2012 – Initial Accounting to EMC
  - Cropland Nitrogen met
  - Pastureland nitrogen only met in LNH
  - No increase in phosphorus loss
- Jan 2014 – 2nd accounting to DWR
  - Cropland Nitrogen met in 2 of 3 subwatersheds
  - No increase in phosphorus loss

Jordan Agriculture Rule Costs

Project Costs from 2007 Fiscal Note= $2.5 million

- **Assumptions:**
  - **Cost Share (Farmers pay 25%)**
  - **Structural BMPs for Pasture & Cropland**

Contact Information

Tom Reeder
Director, NC Division of Water Resources
919-707-9027
tom.reeder@ncdenr.gov